

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

Claims 1-32. (Canceled)

33. (Currently Amended) A device for analyzing blood, comprising:

a transducer element, the transducer element including at least one of piezoelectric, electrostrictive, magnetostrictive, acousto-optic, or thermo-acoustic sensors, or a combination thereof;

a biologically active substance in communication with the transducer element, the biologically active substance promoting interactions between the blood and the transducer element;

a signal driver in communication with the transducer element, the signal driver applying a signal to the transducer element, and the signal driver varying a value of the signal;

an inlet port configured to direct blood to the transducer element; and

a signal processor in communication with the transducer element, wherein the signal processor measures a response of the blood to the signal and determines ~~characteristic~~ one or more characteristics of the blood as a function of the measured response.

34. (Canceled)

35. (Previously Presented) The device of claim 33, wherein the transducer element includes an array of sensors.

36. (Previously Presented) The device of claim 33, wherein the biologically active substance facilitates determination of a characteristic of the blood.

37. (Currently Amended) The device of claim 33, wherein the value is at least one of the following: a frequency, an amplitude, or a phase.

38. (Previously Presented) The device of claim 37, wherein the frequency values ranges from 1 KHz to 10 GHz.

39. (Currently Amended) The device of claim 37, wherein the frequency values are provided to the transducer in at least one of the following ways: individually, sequentially, ~~[[and]]~~ or simultaneously at the available frequencies.

40. (Currently Amended) The device of claim 37, wherein the frequency values include at least one of ~~the following~~: resonant, antiresonant, harmonic, or ~~[[and]]~~ anharmonic frequencies of ~~[[the]]~~ a first and higher orders.

41. (Previously Presented) The device of claim 33, wherein a depth of penetration into the blood by an effect created by the transducer element is in the range of 1 nanometer to 1 centimeter from a surface of the transducer element.

42. (Previously Presented) The device of claim 33, further comprising a catheter in communication with the transducer.

43. (Previously Presented) The device of claim 33, wherein the device is self-administered.

44. (Previously Presented) The device of claim 33, further comprising a first and second acoustic sensor, wherein the first sensor analyzes the blood, and wherein the second sensor compares the blood to a reference fluid.

45. (Currently Amended) The device of claim 33, wherein the biologically active substance is collagen, wherein the value of the signal that is varied is a frequency and the one or more characteristics including at least one of a platelet adhesion or a coagulation, and wherein a higher frequency permits detection of the platelet adhesion, and wherein a lower frequency permits detection of the coagulation.

46. (Currently Amended) The device of claim 33, wherein the biologically active substance is thromboplastin, wherein the value of the signal that is varied is a frequency and the one or more characteristics including at least one of a blood coagulation, a plasma coagulation factor concentration or a plasma coagulation factor activation, and wherein a lower frequency is applied to the transducer element to permit detection of the blood coagulation, and wherein a higher frequency is applied to the transducer element to permit ~~detect~~ detection of at least one of ~~one of the~~ plasma coagulation factor concentration ~~[[and]]~~ or the plasma coagulation factor activation.

47. (Previously Presented) The device of claim 33, further comprising a bulk bioactive material that facilitates determination of a characteristic of the blood.

48. (Previously Presented) The device of claim 33, further comprising data storage, data processing and data transmission.

49. (Currently Amended) The device of claim 48, wherein the data storage stores at least one of the following: medical patient data, blood data, temperature, heart rate, ~~[[and]]~~ or blood pressure.

50. (Previously Presented) The device of claim 48, wherein the data processing unit provides medical condition information to a patient.

51. (Previously Presented) The device of claim 48, wherein the data transmission unit provides wired and wireless communication between the device, a patient and a medical health center.

52. (New) A device for analyzing blood, comprising:  
a transducer element;

a biologically active substance in communication with the transducer element, the biologically active substance promoting interactions between the blood and the transducer element;

a signal driver in communication with the transducer element, the signal driver applying a signal to the transducer element, and the signal driver varying a frequency value of the signal, the frequency value ranging from 1 KHz to 10 GHz;

an inlet port configured to direct blood to the transducer element; and

a signal processor in communication with the transducer element, wherein the signal processor measures a response of the blood to the signal and determines one or more characteristics of the blood as a function of the measured response.

53. (New) A device for analyzing blood, comprising:

a transducer element;

a biologically active substance in communication with the transducer element, the biologically active substance promoting interactions between the blood and the transducer element;

a signal driver in communication with the transducer element, the signal driver applying a signal to the transducer element, and the signal driver varying a frequency of the signal, the frequency values including at least one of resonant, antiresonant, harmonic, or anharmonic frequencies of a first and higher orders;

an inlet port configured to direct blood to the transducer element; and

a signal processor in communication with the transducer element, wherein the signal processor measures a response of the blood to the signal and determines one or more characteristics of the blood as a function of the measured response.

54. (New) A device for analyzing blood, comprising:

a transducer element;

a biologically active substance in communication with the transducer element, the biologically active substance promoting interactions between the blood and the transducer element;

a signal driver in communication with the transducer element, the signal driver applying a signal to the transducer element, and the signal driver varying a value of the signal;

an inlet port configured to direct blood to the transducer element;  
a first and a second acoustic sensor, the first sensor analyzing the blood, and the second sensor comparing the blood to a reference fluid; and

a signal processor in communication with the transducer element, wherein the signal processor measures a response of the blood to the signal and determines one or more characteristics of the blood as a function of the measured response.

55. (New) A device for analyzing blood, comprising:  
a transducer element;  
a biologically active substance in communication with the transducer element, the biologically active substance being collagen and the collagen promoting interactions between the blood and the transducer element;

a signal driver in communication with the transducer element, the signal driver applying a signal to the transducer element, and the signal driver varying a frequency of the signal;

an inlet port configured to direct blood to the transducer element; and  
a signal processor in communication with the transducer element, wherein the signal processor measures a response of the blood to the signal and determines one or more characteristics of the blood as a function of the measured response, the one or more characteristics including at least one of a platelet adhesion or a coagulation, a higher frequency permitting detection of the platelet adhesion and a lower frequency permitting detection of the coagulation.

56. (New) A device for analyzing blood, comprising:  
a transducer element;  
a biologically active substance in communication with the transducer element, the biologically active substance being thromboplastin and the thromboplastin promoting interactions between the blood and the transducer element;

a signal driver in communication with the transducer element, the signal driver applying a signal to the transducer element, and the signal driver varying a frequency of the signal;

an inlet port configured to direct blood to the transducer element; and  
a signal processor in communication with the transducer element, wherein the signal processor measures a response of the blood to the signal and determines one or more characteristics of the blood as a function of the measured response, the one or more characteristics including at least one of a blood coagulation, a plasma coagulation factor concentration, or a plasma coagulation factor activation, and a lower frequency being applied to the transducer element to permit detection of the blood coagulation, and a higher frequency being applied to the transducer element to permit detection of at least one of the plasma coagulation factor concentration or the plasma coagulation factor activation.

57. (New)                    The device of claim 54, wherein the transducer element includes at least one of: piezoelectric, electrostrictive, magnetostrictive, acousto-optic, or thermo-acoustic sensors, or a combination thereof.

58. (New)                    The device of claim 54, wherein the transducer element includes an array of sensors.

59. (New)                    The device of claim 54, wherein the value is at least one of the following: a frequency, an amplitude, or a phase.

60. (New)                    The device of claim 59, wherein the frequency values range from 1 KHz to 10 GHz.

61. (New)                    The device of claim 59, wherein the frequency values are provided to the transducer in at least one of the following ways: individually, sequentially, or simultaneously at the available frequencies.

62. (New) The device of claim 59, wherein the frequency values include at least one of: resonant, antiresonant, harmonic, or anharmonic frequencies of a first and higher orders.

63. (New) The device of claim 54, wherein a depth of penetration into the blood by an effect created by the transducer element is in the range of 1 nanometer to 1 centimeter from a surface of the transducer element.

64. (New) The device of claim 54, further comprising a catheter in communication with the transducer.

65. (New) The device of claim 54, further comprising data storage, data processing and data transmission.

66. (New) The device of claim 65, wherein the data storage stores at least one of the following: medical patient data, blood data, temperature, heart rate, or blood pressure.

67. (New) The device of claim 65, wherein the data processing unit provides medical condition information to a patient.

68. (New) The device of claim 65, wherein the data transmission unit provides wired and wireless communication between the device, a patient and a medical health center.

69. (New) The device of claim 54, wherein the value is at least one of the following: a frequency, an amplitude, or a phase, and the value is varied according to a programmable scheme.